REMARKS

Reconsideration of the July 11, 2003 Official Action is respectfully requested.

Claims 35-38 have been amended to recite the C content disclosed on page 7, line 15 of the specification.

Applicants again affirm the election of the invention of Group I, i.e., Claims 1-26. Claims 35-38 are directed to the elected invention. Applicants reserve the right to file a divisional application directed to the subject matter of Claims 27-34.

Claims 1-26 and 35-38 were rejected under 35 USC §103(a) over Japanese Publication No. 2000-129332 ("Japan '332"). The reasons for the rejection are set forth on pages 2-3 of the Official Action. This rejection is respectfully traversed for the following reasons.

In the rejection, examples C, E, F, G and H (all of which include over 0.01% C) are alleged to "meet the claimed composition" and it is stated that "[t]he English abstract of JP '332 discloses an ultra-low carbon steel having a composition with constituents whose wt% ranges overlap those recited by the claims; such overlap renders applicant's composition prima facie obvious despite differences in non-overlapping areas, see In re Malagari, 182USPQ549" (Official Action at page 2).

Claim 1 sets forth an ultra-low carbon steel having a chemical composition including, in mass percent, C: at most 0.010%, Si: at most 0.5%, Mn: at most 1.5%, P: at most 0.12%, S: at most 0.030%, Al: more than 0.01%, and at most 0.080%, N: at most 0.0080%, one or both of Ti: at most 0.10% and Nb: at most 0.05%, B: 0 - 0.0050%, V: 0 – 0.05%, Ca: 0 – 0.0050%,

and at most 0.1% of each of Cu, Cr, Sn, and Sb as unavoidable components, wherein the total number of non-metallic inclusions observed in 60 fields under a microscope in a sample of the steel prepared in accordance with JIS G0555 is at most 20. The combination of features recited in Claim 1 is not suggested by Japan '332.

Claim 14 sets forth an ultra-low carbon steel sheet made of a steel having a chemical composition including, in mass percent, C: at most 0.010%, Si: at most 0.5%, Mn: at most 1.5%, P: at most 0.12%, S: at most 0.030%, Al: more than 0.01%, and at most 0.080%, N: at most 0.0080%, one or both of Ti: at most 0.10% and Nb: at most 0.05%, B: 0 - 0.0050%, V: 0 – 0.05%, Ca: 0 – 0.0050%, and at most 0.1% of each of Cu, Cr, Sn, and Sb as unavoidable components, wherein the total number of non-metallic inclusions observed in 60 fields under a microscope in a sample of the steel prepared in accordance with JIS G0555 is at most 20. The combination of features recited in Claim 14 is not suggested by Japan '332.

The English language Abstract of Japan '332 describes a cast piece for sheet steel which includes 0.001-0.2% C, 0.01-0.5% Mn, 0.001-0.5% Si, 0.001-0.3% P, 0.0005-0.05% S, over 0.006 to 0.1 % of Al, 0.005-0.06% Ti, 0.0005-0.0050% Ca, 0.0005-0.01% N, 0.0005-0.0050% O, with the number of alumina cluster inclusions being less than 20/kg and the number of inclusions of size 53 μm or larger being less than 200/kg (Abstract of Japan '332). However, with reference to Examples C, E, F, G and H of Japan '332, it should be noted that each example has a C content of greater than the 0.01% C upper limit

recited in Claims 1 and 14. Accordingly, Examples C, E. F. G and H of Japan '332 do not suggest the steel compositions recited in Claims 1 and 14 which require at most 0.01% C.

As explained in the specification, low carbon aluminum killed steel undergoes powerful deoxidation treatment when being tapped from a converter whereas ultra-low carbon steels do not undergo any deoxidation treatment at the time of tapping from a converter or undergoes only mild deoxidation treatment from the addition of a small amount of aluminum, deoxidation being carried out after decarburization by vacuum degassing treatment (see specification at page 3, line 25 through page 4, line 13). According to the invention, Al is added as a deoxidizing agent at the completion of the decarburization reaction but the upper limit is 0.080% to avoid increasing the amount of alumina inclusions (specification at page 8, lines 22-26). The only ultra-low C steels in the examples of the Japan '332 are Examples A and B wherein the C content is 0.001 and 0.01%, respectively, but such examples include Mg as a deoxidizing agent and an Al content of 0.008% which is below the lower limit set forth in Claims 1 and 14. Accordingly, the ultra-low C steels set forth in the examples of Japan '332 are not suggestive of the combinations of features recited in Claims 1 and 14.

The data set forth in Tables 1-3 show that the number of observed inclusions varies depending on the processing (e.g., casting at higher throughputs results in a higher number of observed occlusions) of the steel composition even when the steel composition meets the compositional ranges set forth in Claims 1 and 14. For instance, while Steel No. 1 in Table 1 meets the claimed composition, Steel No. 1b had a number of observed inclusions of 29

whereas Steel Nos. 1a, 1b and 1d exhibited a number of observed inclusions below 20. Likewise, Steel Nos. 2c and 2d exhibited a number of observed inclusions greater than 20 whereas Steel Nos. 2a and 2b exhibited a number of observed inclusions below 20. Steel No. 3 falls within the claimed composition but Steel No. 3a exhibited a number of observed inclusions greater than 20. Steel No. 4 falls within the claimed composition with Steel No. 4a exhibiting a number of observed inclusions below 20. Steel No. 5 falls within the claimed composition and Steel Nos. 5a, 5b and 5c all exhibited a number of observed inclusions below 20. Steel Nos. 9-13 fall within the claimed composition but Steel Nos. 9b, 10b, 11b, 12b and 13b (which were cast at a higher throughput) exhibited a number of observed inclusions greater than 20 whereas Steel Nos. 9a, 10a, 11a, 12a and 13a all exhibited a number of observed inclusions below 20. Accordingly, it is submitted that the combination of the claimed composition and the feature of the total number of non-metallic inclusions being at most 20 defines a product which exhibits improved press forming properties due to reduced pin holes and surface defects (see specification at page 15, lines 14-17). Such rebuttal evidence is deemed sufficient to overcome the *prima facie* case of obviousness based on Japan '332.

It is submitted that the differences between the claimed subject matter and the prior art are such that the claimed subject matter, as a whole, would not have been obvious at the time the invention was made to a person having ordinary skill in the art.

In view of the foregoing, it is submitted that the present application is in condition for allowance and such action is earnestly solicited.

Respectfully submitted,

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